48. (New) The method according to claim 47, wherein said surface to be irradiated is a wafer surface and a step of forming a semiconductor element on said wafer surface.

REMARKS

The claims are 41, 42 and 45-48 with claims 41, 42, 45 and 47 being independent. Former claims 43 and 44 have been rewritten as new claims 45 and 46. New claims 47 and 48 are added. Claim 47 includes the subject matter of claims 42 and 45 and claim 48 contains subject matter of claim 46. Claims 42, 45 and 46 have been revised to address informalities as to form. Reconsideration of the claims is respectfully requested.

Applicants have amended the Title as suggested. Applicants have also amended the specification by changing the term "sound speed" to --speed of sound– as suggested by the Examiner. The objection to claims 42-44 under Rule 112, second paragraph, has been addressed by appropriate revisions. Accordingly, no new matter has been added and withdrawal of the objections is specifically requested.

Claim 41 (45 and 46) was rejected as obvious over Krasnov '762 in view of Hagiwara '210. Claims 42-44 (42, 47, 48) were rejected as obvious over Krasnov '762 in view of Hagiwara '210 and Ando '805. The grounds of rejection are respectfully traversed.

Prior to addressing the grounds of rejection, Applicants wish to review certain key features and advantages of the present claimed invention. The invention as defined by claims 41, 45 and 46 has a characteristic wherein the laser oscillating apparatus

has a waveguide unit for guiding microwaves into the gas supply path structure. By employing this feature, it is possible to emit a laser beam having a wider pulse width. In particular, in the DC discharge method used for a conventional excimer laser, high DC voltage is applied to laser gas through DC electrodes so as to cause emission of laser light. In this process, however, it is difficult to generate a stable, uniform discharge or to cause laser excitation for an extended time within a long excitation region having a length in the dozens of centimeters along the light axis of the laser. That is because the arc discharge generated between the electrodes for 20 nanoseconds in the DC discharge method is difficult to control to permit a uniform and stable, extended period of time laser emission. To the contrary, in the microwave excitation method and apparatus of the present invention, no arc discharge is generated and the laser can be uniformly and stably emitted over long periods of time..

(A) Krasnov '762 does not use microwaves for excitation of laser gas. Krasnov, instead, generates a laser by RF excitation at 2.03 - 10.6 mKm., column 3, lines 7-9. The high frequency plasma which excites the laser medium is hard to control. Hence, in Krasnov there is no disclosure of a waveguide unit for guiding microwaves into the gas supply path structure or the benefits thereof. The defects of Krasnov are not remedied by Hagiwara.

Hagiwara '210 discloses exposure apparatus using a laser as the light

(B) source. However, Hagiwara fails to teach use of microwaves for excitation of laser gas or the benefits thereof. Therefore, the combination of Krasnov and Hagiwara fails to raise a prima facie case of obviousness.

The invention defined by claims 42, 47 and 48 employs the laser oscillating apparatus and gas supply structure group including a light emitting portion for generating a laser beam, wherein the flow speed of the laser gas at the light emitting portion is higher than the speed of sound. Employing such a feature, the shock wave, which is generated when the flow speed is higher than the speed of sound, is restrained. At the same time, the speed of the laser gas at the emitting portion can be adjusted to a predetermined supersonic speed.

Krasnov '762 fails to teach a gas supply structure group. Hagiwara '210 also fails to disclose a gas supply structure group. Ando merely relates to a method for adjusting a flow speed of fine particles, but does not teach or suggest a laser oscillating apparatus. Accordingly, Ando fails to disclose a light emitting portion for generating a laser beam.

Accordingly, the features of claims 42, 47 and 48 wherein the gas supply structure group includes a light emitting portion for generating a laser beam, and the flow speed of the laser gas at the light emitting portion is higher than the speed of sound are neither disclosed or suggested by any of the cited references or their combination.

It is respectfully requested that the claims be allowed and the cased passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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